

AMENDMENTS TO THE CLAIMS

Please amend the claims as shown below. A complete listing of all pending claims is presented.

1. (Original) A driving apparatus for driving a single-phase or multiple-phase motor having a rotor provided with a magnet and a stator provided with one or more driving coils, characterized by having:

synchronizing reference signal generating means which generates a synchronizing reference signal specified as a basic operation time unit;

driving control means which controls an energizing to said driving coils in synchronization with said synchronizing reference signal;

terminal voltage detecting means which detects a terminal voltage value on arbitrary one or more phases in said driving coils;

terminal voltage holding means which holds the voltage value detected by said terminal voltage detecting means;

operation period setting means which sets a period that said driving control means is conditioned to be non-drive on at least one phase of said driving coils and a period that said terminal voltage detecting means is conditioned to be operative during the period in the non-drive condition; and

synchronous control means which compares, on the same phase, a difference between the voltage value detected by said terminal voltage detecting means and the voltage value

held in said terminal voltage holding means with a reference value, and controls a frequency of said synchronizing reference signal on the basis of a result of the comparison.

2. (Original) The motor driving apparatus according to claim 1, wherein said synchronous control means corrects, when a speed difference of an operation speed of said rotor from an arbitrarily determined rated synchronous speed is caused, said reference value depending on the speed difference.

3. (Original) The motor driving apparatus according to claim 1, wherein said synchronous control means outputs an abnormality detection signal when an abnormality was detected on the basis of said result of the comparison during a rated synchronous operation.

4. (Original) The motor driving apparatus according to claim 1, wherein said terminal voltage holding means is composed of two systems including a system of holding a positive-side terminal voltage value and a system of holding a negative-side terminal voltage value.

5. (Original) A motor driving apparatus for driving a single-phase or multiple-phase motor having a rotor provided with a magnet and a stator provided with one or more driving coils, characterized by having:

drive output means which supplies a drive current to said driving coils;

power-supply voltage supply means which supplies a power-supply voltage to said drive output means;

terminal voltage detecting means which detects a terminal voltage value on arbitrary one or more phases in said driving coils;

terminal voltage holding means which holds the voltage value detected by said terminal voltage detecting means;

operation period setting means which sets a period that a driving control means is conditioned to be non-drive on at least one phase of said driving coils, and a period that said terminal voltage detecting means is conditioned to be operative during the period in the non-drive condition; and

synchronous control means which compares, on the same phase, a difference between the voltage value detected by said terminal voltage detecting means and the voltage value held in said terminal voltage holding means with a reference value, and controls the power-supply voltage of said power-supply voltage supply means on the basis of a result of the comparison.

6. (Original) The motor driving apparatus according to claim 5, wherein said synchronous control means corrects, when a speed difference of an operating speed of said rotor from an arbitrarily determined rated synchronous speed is caused, said reference value depending on the speed difference.

7. (Original) The motor driving apparatus according to claim 5, wherein said synchronous control means outputs an abnormality detection signal, when an abnormality was detected on the basis of said result of the comparison during a rated synchronous operation.

8. (Original) The motor driving apparatus according to claim 5, wherein said terminal voltage holding means is composed of two systems including a system of holding a positive-side terminal voltage value and a system of holding a negative-side terminal voltage value.

9. (Cancelled)

10. (Original) A mobile terminal mounted with a vibrating motor that includes a single-phase or multiple-phase motor having a rotor provided with a magnet and a stator having one or more driving coils and applies vibrations to a casing, and a motor driving apparatus for driving said vibrating motor at the time of a reception, characterized in that:

said motor driving apparatus has:

synchronizing reference signal generating means which generates a synchronizing reference signal specified as a basic operation time unit;

driving control means which controls an energizing to said driving coils in synchronization with said synchronizing reference signal;

terminal voltage detecting means which detects a terminal voltage value on arbitrary one or more phases in said driving coils;

terminal voltage holding means which holds the voltage value detected by said terminal voltage detecting means;

operation period setting means which sets a period that said driving control means is conditioned to be non-drive on at least one phase of said driving coils and a period that said terminal voltage detecting means is conditioned to be operative during the period in the non-drive condition; and

synchronous control means which compares, on the same phase, a difference between the voltage value detected by said terminal voltage detecting means and the voltage value held in said terminal voltage holding means with a reference value, and controls a frequency of said synchronizing reference signal on the basis of the result of the comparison.

11. (Original) A mobile terminal mounted with a vibrating motor that includes a single-phase or multiple-phase motor having a rotor provided with a magnet and a stator provided with one or more driving coils and applies vibrations to a casing, and a motor driving apparatus for driving said vibrating motor at the time of a reception, characterized in that:

said motor driving apparatus has:

drive output means which supplies a drive current to said driving coils;

power-supply voltage supply means which supplies a power-supply voltage to said drive output means;

terminal voltage detecting means which detects a terminal voltage value on arbitrary one or more phases in said driving coils;

terminal voltage holding means which holds the voltage value detected by said terminal voltage detecting means;

operation period setting means which sets a period that a driving control means is conditioned to be non-drive on at least one phase of said driving coils, and a period that said terminal voltage detecting means is conditioned to be operative during the period in the non-drive condition; and

synchronous control means which compares, on the same phase, a difference between the voltage value detected by said terminal voltage detecting means and the voltage value

held in said terminal voltage holding means with a reference value, and controls the power-supply voltage of said power-supply voltage supply means on the basis of the result of the comparison.